ISSUE 2/2018

RESEARCH & INNOVATION@UPM

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UPM

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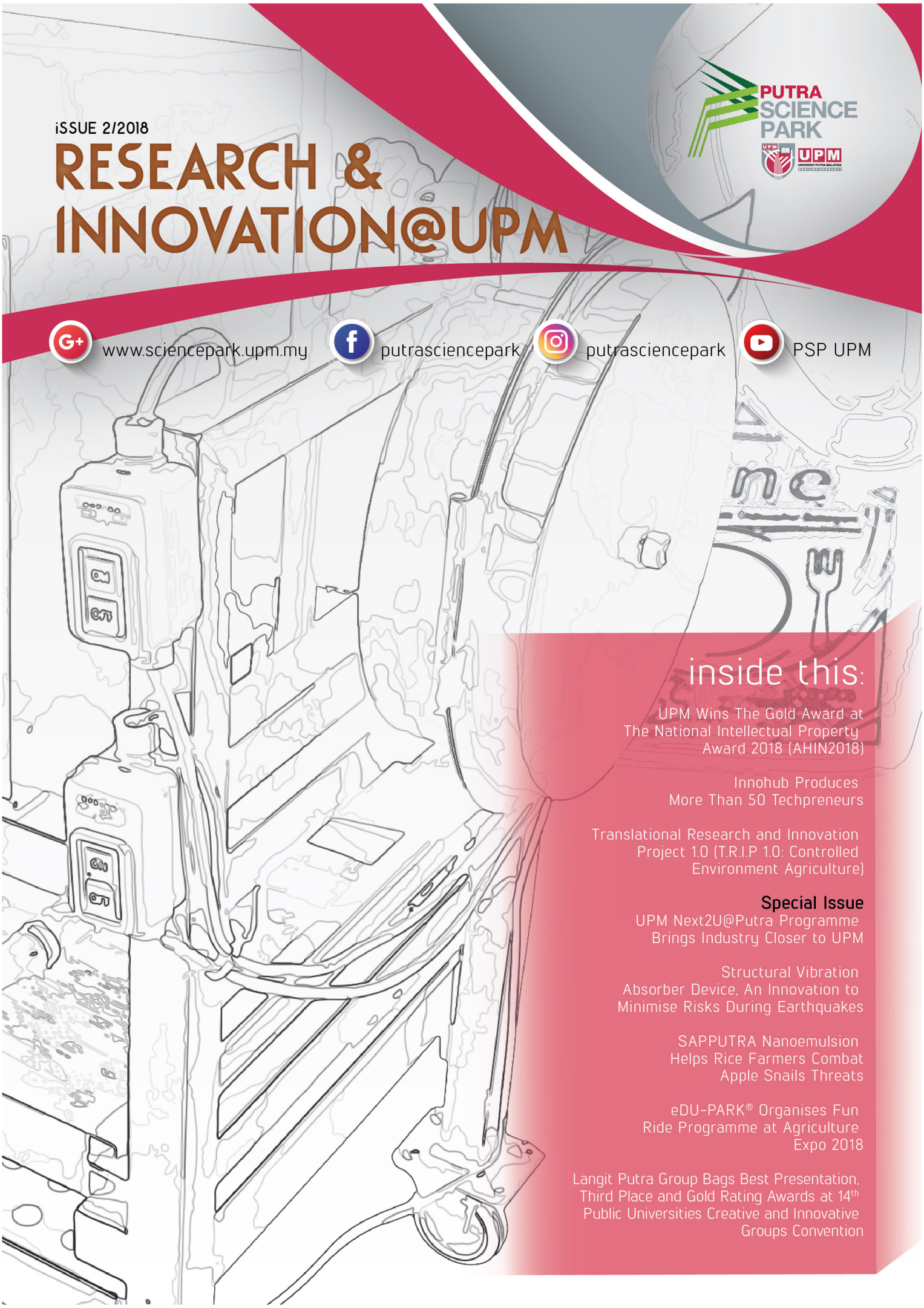

inside this:

VOICE OF CHIEF EDITOR

Dear readers,
We have come to the end of 2018 and Putra Science Park (PSP) still has a series of interesting stories to share with all of you in this year-end issue of Research and Innovation@UPM, a publication that is aimed to share our activities and achievements for the university.

I would like to kick it off by highlighting one of our many great achievements and that is our third back-to-back victory as the recipient of the prestigious National Intellectual Property Award 2018 (AHIN 2018) in the Organisation Category (Best Intellectual Property Management). UPM bagged home a cash prize of RM30,000 and trophies. For the record, UPM has previously won this category in years 2008, 2012, 2014, 2016 and 2017.

Not only that, UPM also got more than what it expected at the event after romping home another RM10,000 and a trophy when Prof. Dr. Lai Oi Ming from the Faculty of Biotechnology and Biomolecular Sciences came out on top in the Patent Category for Remdii Sensitive, an innovation that is able to relieve eczema symptoms.

In addition, PSP would also like to extend its heartiest congratulations to all 10 InnoHub participants following their graduation from the programme after their companies went through the elbow-grease market validation activities and have gained sufficient income that enables them to remain competitive. This is the first batch of CEO's who had proved their mettle since the programme's inception in 2013. To date, InnoHub has successfully produced 50 techpreneurs with a potential to be an impetus in spearheading tech-based businesses.

PSP has recently introduced the Next2U@Putra Programme that is intended at helping the university to expedite the transfer of technology besides being the key hub for its homegrown inventions. This programme is an initiative to also encourage the industry to collaborate with UPM in the commercialisation activities.

Mother nature is full of lessons. In the wake of the the recent earthquake incidents, the world has just witnessed how densely populated areas could be wiped out into a total obliteration. Due to these catastrophic consequences, a team of researchers led by Assoc. Prof. Farzad Hejazi from the Faculty of Engineering has taken an initiative to introduce a pre-emptive solution in a bid to mitigate the impact, namely the Structural Vibration Absorber Device. This innovation is engineered to absorb the vibration caused by an earthquake and thus, prevents damage to buildings and reduces risks of fatality.

Also featured in this issue, a botanical pesticide known as SAPPUTRA Nanoemulsion which is formulated to combat apple snails threats that have been causing grave losses to the rice farmers. The idea of this agricultural technology was mooted by Prof. Rita Muhamad Awang and her team from the Faculty of Agriculture.

eDU-PARK® is also actively organising some exciting programmes including the fun ride activity and tour packages to exquisite spots around UPM. Both the innovation and cycling programme were officially launched by the Minister of Agriculture and Agro-Based Industry, Dato' Salahuddin Ayub during the 42nd UPM Convocation and Agriculture Expo 2018's opening ceremony.

Last but not least, it also features the Translational Research and Innovation Program or TRIP initiative that generates technology transfer activities through creations of comprehensive projects and the Skytider innovation, a staff effort which has garnered them many awards and recognitions.

I hope you enjoy reading Research & Innovation@UPM as much as we enjoy publishing it. I look forward to keeping you informed and see you again in 2019!

Dr. Mohamad Fakry Zaky Ja'afar
Deputy Director
Innovation Promotion and Marketing Division
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(AHIN2018)

UPM Wins The Gold Award at The National Intellectual Property Award 2018

Kuala Lumpur – Universiti Putra Malaysia (UPM) won the gold award at the National Intellectual Property Award 2018 (AHIN2018) under the Organisation Category (Best Intellectual Property Management).

UPM Vice Chancellor, Prof. Datin Paduka Dr. Aini Ideris received the award from the Minister of Domestic Trade and Consumer Affairs, Dato' Saifuddin Nasution Ismail, at the Tun Abdul Razak Hall, Menara Kembar Bank Rakyat here.

UPM brought home RM30,000, two trophies and a certificate of appreciation from the World Intellectual Property Organisation (WIPO) and the Intellectual Property Corporation of Malaysia (MyIPO). This is the sixth win for UPM for the same category since 2008.

Besides the award, UPM has also won the gold medal for the Patent Category for Remdii Sensitive, an innovation which is able to relieve symptoms of eczema. The product is the outcome of a research led by Prof. Dr. Lai Oi Ming from the Faculty of Biotechnology and Biomolecular Sciences who also won RM10,000.00 in cash, a trophy and a certificate of participation.

Also present were UPM Deputy Vice Chancellor (Research and Innovation), Prof. Dr. Zulkifli Idrus, Programme Leader of the Enhancement of Intellectual Property Protection, Dr. Zahira Mohd Ishan, and Programme Leader of Research and Innovation, Putra Science Park, Dr. Mohammad Fakri Zaky Jaafar.

UPM Vice Chancellor, Prof. Datin Paduka Dato' Dr. Aini Ideris said that UPM achievement is contributed by the development of a commercialisation ecosystem which involves a systematic management of intellectual property, starting with the intellectual property protection until the commercialisation stage which is managed by Putra Science Park.

The ecosystem helps to ensure the commercialisation of UPM technology and enhance the talent of selected graduates to become techno-entrepreneurs through the Innohub programme.

"To date, UPM has successfully generated a total commercialisation income of RM13.5 million and gross sales of RM62 million, filed 2623 intellectual properties and established 59 start-up companies," she said.

Last year, UPM won the gold award for the Organisation Category (Best Intellectual Property Management) at the National Intellectual Property Award (AHIN) 2017. It also won the same award in the previous year.

A total of seven award categories were put up for contest: Organisation (Best Intellectual Property Management), Patent, Trade Marks & Geographical Indications, Industrial Design, Copyright, Intellectual Property Inventor, and Young Intellectual Property Inventor. – UPM

TRANSLATIONAL RESEARCH AND INNOVATION PROJECT 1.0 (T.R.I.P 1.0: CONTROLLED ENVIRONMENT AGRICULTURE)

Among the most important factors that contribute towards the success of widespread adoption of an innovation is the participation of all potential stakeholders during its ideation stage. This is slightly different from conventional wisdom in research and development where the variables are reduced to a minimum with focus on limited outcomes.

An initiative by Putra Science Park, UPM's technology transfer office, trying to address this strategy is Translational Research and Innovation Program, or TRIP. The objective of this program is to generate technology transfer activities through the creation of a comprehensive project, encompassing all important components as early as possible, such as technology, expertise, industry, government, NGO's and community.

The first project embarked under TRIP is TRIP 1.0: Controlled Environment Agriculture. Controlled Environment Agriculture (CEA) has been identified as the way forward for a sustainable, secure and safe food production. Headed by Dr. Mohamad Fakri Zaky Ja'afar, the project aims to create a Minimum Viable Product (MVP) in the form of commercial scale building of an indoor vertical farm employing the concept of CEA on a 4,000s.f footprint.

The faculties involved are:

1. Faculty of Agriculture;
2. Faculty of Engineering; and
3. Faculty of Design and Architecture

Currently the project is in its development stage where market and technical validations study being carried out. A feasibility model has been proposed and managed to attract the interests of several potential investors and collaborators. The target is to get the farm up and running by mid 2019.

Market validation in Langkawi

Site visit to CityFarm Malaysia, Seri Kembangan

Site visit to Indoor Vertical Farming Research Facility Melaka

Site visit in Plan Factory MARDI, Laman Armada Jentera, MAHA 2018

Site validation at Movenpick KLIA Hotel

Market validation in Cafe 360, Menara Kuala Lumpur

Site visit to Babylon Vertical Farm, Ampang

QUOTES

"Imagination is more important than knowledge. Knowledge is limited. Imagination encircles the world." – ***Albert Einstein***

"Count your age by friends, not years. Count your life by smiles, not tears."
– ***John Lennon***

INNOHUB PRODUCES MORE THAN 50 TECHPRENEURS

SERDANG - The establishment of the Market Validation Hub or InnoHub in late 2013 by Universiti Putra Malaysia (UPM) has successfully produced more than 50 technology entrepreneurs or techpreneurs with the capacity to spearhead a technology startup.

10 companies recently graduated when their techpreneurs or Chief Executive Officers (CEOs) successfully met 100% of the market validation activities criteria and gained sufficient income which enables start-up companies to remain competitive through a solid business model.

The graduation certificates were presented by the Minister of Entrepreneur Development, Mohd. Redzuan Md. Yusof to the officers and entrepreneurs from the 10 companies at UPM InnoHub Innovation Showcase event here.

In his officiating speech, Mohd. Redzuan said that the ministry will offer its support to UPM InnoHub programme and provide assistance in various aspects to ensure that more techpreneurs are produced to accelerate the country's economy.

According to him, start-up companies are in need of substantial support and assistance to expand their business globally.

While extending his congratulations on the graduation of the 10 UPM technologies under the InnoHub programme, Mohd. Redzuan expressed his belief that the success was achieved due to the collaboration between the techpreneurs and academicians as well as the researchers who embraced a dynamic work culture.

He hoped that the techpreneurs and UPM researchers would continuously be committed and enthusiastic in creating innovations - turning laboratory scale prototypes into products that have market values.

UPM Vice Chancellor, Prof. Datin Paduka Dato' Dr. Aini Ideris said that InnoHub is an ecosystems preparation hub which strengthens the collaboration between academicians and industries as well as investors.

She said that the objective of InnoHub is to conduct market validation for Research and Development (R&D) technologies in order to verify their potential in resolving issues faced by the target users and buyers. – UPM

Special Issue

UPM Next2U@Putra Programme Brings Industry Closer to UPM

Universiti Putra Malaysia (UPM) is one of the most vibrant universities in conducting academia-industry collaboration initiatives within the university sphere as an interaction platform between researchers, industries, companies, government and public. For a clear implementation of this initiative, Putra Science Park (PSP) has rebranded the concept of Science Park through the establishment of the Next2U@Putra Programme.

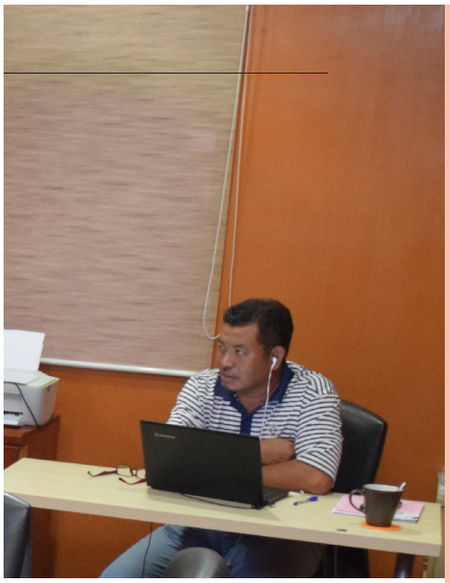
The programme serves to help the university expedite the transfer of knowledge and technology as the university is the key hub where all new technologies and innovations are being studied and produced. This programme is an initiative to encourage industry to collaborate with UPM in the commercialisation activities.

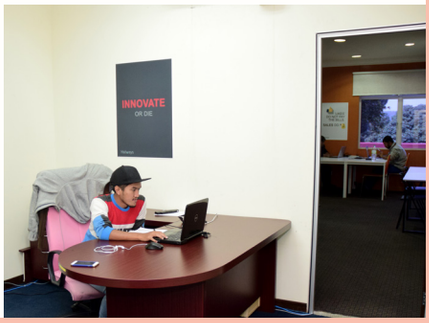
It is a concept towards a conducive ecosystem in building and cultivating tech-based businesses which are a key element in the Quadruple Helix Model. The commercialisation activities are growing and the university needs to be more creative and proactive in attracting industry to collaborate with UPM.

Implementation Objectives

The collaboration of this technology commercialisation is expected to provide substantial benefits to UPM from the following:

1. Collaborating with the industry in commercialising UPM technologies.
2. Providing services, facilities, resources and industrial network as well as consultation with entrepreneurs in strengthening production.
3. Providing a conducive environment to entrepreneurs so that they are more exposed to the real environment in the business world.
4. Reducing the risk of failure in the business through facility-sharing and cost-saving.
5. Providing training and skills in entrepreneurship to produce skilled entrepreneurs.

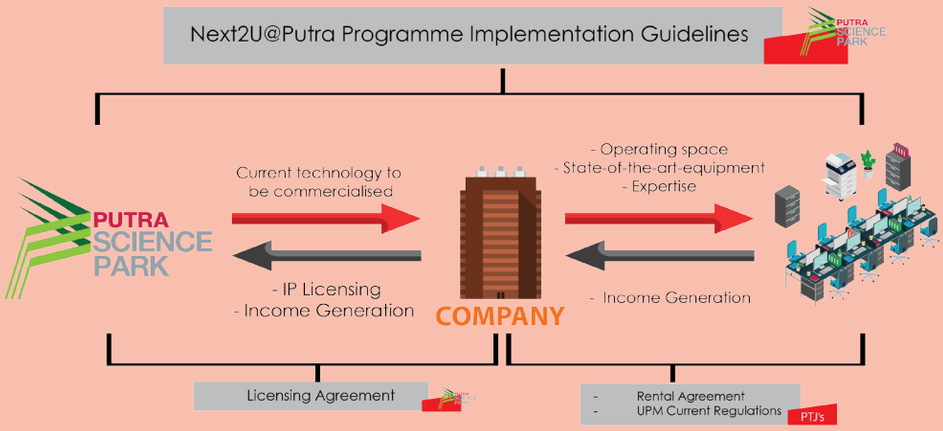




The **main concepts** of this initiative are the **renting of spaces for the industry**, providing technologies that already have IP protection, expertise and skilled workers. In return, the industry will provide funds of the respective projects including research funding, space rental and other necessities. Those who wish to use the laboratory facilities are able to do so by contacting the lab owners directly. UPM will indirectly generate income from space rental and laboratory services to the industry.

"The establishment of the Next2U@Putra Programme is an initiative to encourage industry to collaborate with the university and this is not a typical space rental programme, but prospective tenants must have a win-win agreement with UPM in adding value to the commercialisation activities," said the programme's coordinator, Norliyana Kamarudin.

Next2U@PUTRA PROGRAMME CONCEPT



Output Predictions

All of these transactions will have great benefits and impact to the university as well as contributing to the achievement of university key performance indicators (KPI's) in terms of:

1. Assisting the university to commercialise products derived from research to the industry.
2. Enhancing the industry confidence in the university in producing technologies and products that are able to be marketed by the industry.
3. Obtaining funding from the industry for innovation upscale process before technology transfer is able to be implemented.
4. Expediting IP licensing.
5. Providing exposure to graduates through the lab-to-market bridging process, as well as on technology transfer.
6. Providing consultation after commercialisation.

"This programme also gives the responsibility centres (PTJ's) an opportunity to generate additional income from the existing spaces and will also help save the management costs without putting too much burden on the PTJ's to earmark certain portion of fund for developing and managing new infrastructure. The rental agreement will be initiated by the UPM Bursar Office and PSP will facilitate the process," she further explained adding that the monthly charges are subject to the sizes of the space rented.

For further inquiries on the Next2U@Putra Programme, please contact Ms. Norliyana Kamarudin at 03-8947 1631 or through email norliyana@upm.edu.my.

Norliyana Kamarudin

Clients :

Putra Science Park
Our Visitors & Technology Transfer Activities

- **Licensing meeting** chaired by Dr. Mohamad Fakri Zaky Jaafar with Alfacon, a company from Bangalore, India.

- Pocket Talk Session on the UPM's Green Technology in Agriculture by Dr. Mohamad Fakri Zaky Jaafar, at the International Greentech & Eco Products Exhibition & Conference (IGEM 2018) at KLCC.

- The Office of Deputy Vice-Chancellor (Research & Innovation) Creative and Innovative Group (KIK), Langit Putra won 3rd place for its 'Skytider' invention at the Expo on University Research Invention, Creation and Innovation 2018 hosted by Universiti Malaya. The group also bagged home the Best Presentation (technical category), Gold Rating awards and a cash prize of RM2,000. In the picture, members of Langit Putra flaunting the mock cheque with Prof. Datin Paduka Dato' Dr. Aini Ideris (second from right), Vice-Chancellor of Universiti Putra Malaysia.

- Visit from WIPO, MYPO and Johns Hopkins Techventure to InnoHub.

- Putra Dynamics Roadshow to RISDA as a follow-up to the strategic network and collaboration meeting that was held at the University Community Transformation Centre (UCTC), UPM in April.

- Putra Dynamics Roadshow to UPNM for a technology transfer expertise and experience sharing session to set a benchmark for UPNM in developing its own on-campus technology transfer centre.

QUOTES

"The duty of youth is to challenge corruption." ***– Kurt Cobain***

"The scientists of today think deeply instead of clearly. One must be sane to think clearly, but one can think deeply and be quite insane." ***– Nikola Tesla***

Structural Vibration Absorber Device, an Innovation to Minimise Risks During Earthquakes

SERDANG - Researchers from Universiti Putra Malaysia (UPM) have successfully developed an innovative Structural Vibration Absorber Device which absorbs vibration caused by an earthquake and thus, prevents damage to buildings and reduces risk of death.

The device is applicable to various types of buildings, including conventional buildings, and it can function in a different range of earthquake intensity to protect buildings against ground vibration.

Furthermore, the device is not only limited for application in buildings, but is also suitable for bridges, vehicles, machinery, jetties, railways lines or any structures that are exposed to any types of vibrations.

The innovation consists of four technologies, namely, the Rubber Wall Damper, Multipurpose Viscous Damper, Viscoelastic Bracing Damper, and Volumetric Compression Bracing, which are used as a vibration control system and damper.

It absorbs vibrations in building structures and buildings to reduce the effect of structural movement caused by seismic loading by increasing the overall lateral resistance and damping characteristics of the building structures.

The technology was developed by a group of researchers led by Assoc. Prof. Dr. Farzad Hejazi from the Faculty of Engineering, UPM. Other researchers involved were Prof. Dato' Ir. Dr. Mohd Saleh Jaafar, Mohd Azmi Mohd Zain, Mehdi Mohammadi, and Esmaeil Ebrahimi.

QUOTES

"If you tell the truth, you don't have to remember anything." ***– Mark Twain***

"There is no love sincerer than the love of food". ***– George Bernard Shaw***

Assoc. Prof. Dr. Farzad said that the damper will react when it is installed on a structure which experiences vibration during ground movement, and it will absorb the vibration efficiently to avoid damage to the structure.

"The rubber-based device is able to function as a vibration absorber through the application of passive energy dissipation to increase the capacity of the overall lateral resistance and the damping feature on the structure to strengthen concrete structures.

"It is able to save up to 60 percent of the cost compared to the use of imported devices with the same capacity available in the market," he added while explaining that except for the Multipurpose Viscous Damper, all these devices were made of green material, rubber, which is a cheap local raw material that acts as the vibration absorber.

He added that the device can easily be installed in both new and existing structures, and the design is made to be cost-effective which allows it to be used for conventional buildings including those in Sabah and Sarawak.

The research to develop the Structural Vibration Absorber Device started in 2006, followed by the construction of its prototype in 2012 before a full scale testing is carried out later this year.

He said that all the devices are ready to be commercialised, and currently, the market size prototypes of these devices are being produced. – UPM

SAPPUTRA Nanoemulsion Helps Rice Farmers Combat Apple Snails Threats

Serdang – Threats from Pomacea spp or also known by its common name as apple snail are one of the major problems faced by the rice farmers in Malaysia, subsequently affecting the country's rice supply.

In addressing the problem, a group of agriculture experts from the Faculty of Agriculture, Universiti Putra Malaysia (UPM) led by Prof. Dr. Rita Muhamad Awang, has formulated a botanical pesticide to curb the pest known as SAPPUTRA Nanoemulsion.

This eco-friendly innovation is produced using active biodegradable ingredients extracted from natural plants as they are able to organically decompose, poison-free and act as an antifeedant.

"This agricultural innovation is derived from plant-based ingredients that are safe to use and can be classified as a green technology. It is a water-based emulsion formulation containing nano particles following its efficiency in terms of use. More importantly, it has the property to act as an antifeedant for apple snails."

In addition, it is able to minimise the dependence of the rice farmers on the use of chemical pesticide in an attempt to reduce their risks of exposure to health hazards while freeing the environment from harmful toxic substances.

Patented in 2015, SAPPUTRA Nanoemulsion was also co-researched by Dr. Anis Syahirah Mokhtar together with Prof. Dr. Dzolkhifli Omar using the funds from various public-private grants and has been licensed to AMCO Niaga Sdn. Bhd.

Meanwhile, the technology was officially launched through a memorandum of agreement (MoA) between UPM and AMCO Niaga Sdn. Bhd. by the Minister of Agriculture and Agro-Based Industry, Dato' Salahuddin Ayub during the 42nd UPM Convocation Ceremony and Agriculture Expo, 2018's opening ceremony. Also present at the event were UPM Vice-Chancellor, Datin Paduka Dato' Dr. Aini Ideris and other UPM senior officials. – UPM

QUOTES

"A book must be the ax for the frozen sea within us." ***– Franz Kafka***

"Practise what you know, and it will help to make clear what now you do not know."
- Rembrandt van Rijn

QUOTE

"Let there be spaces in your togetherness." ***– Khalil Gibran***

Serdang - In conjunction with the 42nd UPM Convocation and Agriculture Expo 2018, eDU-PARK® Division organised a cycling programme by providing electric bicycle rental service to all visitors who came to celebrate the ceremony with the university's community.

Its programme coordinator, Nurul Naatasah Mohd Yusoff, said the idea was mooted by the eDU-PARK® team when it realised that the high traffic volume during the event would cause massive congestion in the university and tend to hinder the visitors to move around easily .

"The service is provided at aiming to reduce congestion caused by heavy traffic flow during the convocation ceremony due to high number of moving vehicles coming in and out. eDU-PARK® Division took the initiative by providing the service to make it easier for visitors to move around via this enjoyable cycling activity," she said.

In addition, eDU-PARK® also offered exciting packages for visitors including cycling to two exquisite spots in UPM, which were the Malay Heritage Museum that exhibits pristine historical artefacts also olden Malay architecture and the Conservatory Park, where visitors could see exotic forest plants while enjoying a garden-in-the-city experience.

"Those who are interested in going to both places through our packages are able to do so by riding the bicycles as they are not located that far from our booth and enjoy the experience at a very low price of RM20 for each location. For those who wish to just ride for a leisurely sightseeing around the campus area are also able to rent the bicycles at RM5 each," she said adding that a total of 20 electric bicycles were on offer during the expo.

Meanwhile, the UPM Agriculture Expo 2018 was held at the Students Academic Complex from 25th to 31th October, offering various activities organised by the University Agriculture Park (TPU) and officially launched by the Minister of Agriculture and Agro-Based Industry, Dato' Salahuddin Ayub. Also present at the launching event were UPM Vice-Chancellor, Datin Paduka Dato' Dr. Aini Ideris and other officials of UPM. – UPM

eDU-PARK® Organises Fun Ride Programme at Agriculture Expo 2018

QUOTE

"The fruit of love's great tree is poverty; Whoever knows this knows humility." ***- Farid al-Din Attar***

Langit Putra Group Bags Home Best Presentation, Third Place and Gold Rating Awards at 14th Public Universities Creative and Innovative Groups (KIK) Convention

Kuala Lumpur - Langit Putra group, consisting of staff from Putra Science Park (PSP) and the Office of the Deputy Vice-Chancellor (Research and Innovation) UPM, emerged victorious in winning the hearts and minds of the jury as it triumphed the best presentation, third place and gold rating awards under the technical category, prevailing over 15 teams from other universities at the 14th Public Universities Creative and Innovative Groups (KIK) Convention, here.

The group was made of Asrizam Esam, Norliyana Kamaruddin, Hafliza Hussin, Mohd Mas'Ataillah Ismail, Muhammad Izzat Noradzmi, Norazlin Monir, Mohammad Hisham Omar and facilitated by Shahriman Hashim with its invention the Skytider™, a low-cost innovative tool that was designed to help expedite the installation of buntings on tall poles and could be manned by only one person without the need of a ladder.

"We mulled over the idea of creating this innovation based on the problems encountered during events or activities that required us to put up or take down outdoor buntings on poles around the campus area. This work was done by our staff since we did not hire any contractors to do it for us. As far as we know, the problems were not only faced by us at UPM but also other universities and the people who run the bunting installation business," said the group leader, Asrizam Esam during a presentation at the expo.

"It uses cable ties instead of steel wire ropes. The use of the steel wires during installation has led to irresponsible abandonment of rusty wires that may cause corrosion to the poles and tarnish the UPM green environment scenery," he further added.

Skytider™ was made from light steel, weighing around 850g each and has proved to help expedite the installation work, increase the safety level and save costs through its one-man operation system.

Meanwhile, the group nabbed a cash prize of RM2,000, trophies and certificates that were presented by the Vice-Chancellor of University of Malaya, Datuk Ir. Dr. Abdul Rahim Hj. Hashim. The convention was held in conjunction with the University Research Invention, Creation and Innovation Expo (EUREKA) 2018 from 14th to 16th August 2018 at University of Malaya with the main objective to promote and explore new ideas in design and innovation. – UPM

Awards and Recognitions

- Creative and Innovative Group (KIK) Awards - Best Presentation, Third Place and Gold Rating (technical category).
  : 14th Public Universities Creative and Innovative Groups (KIK) Convention 2018.
- Creative and Innovative Groups (KIK) Awards.
  : Quality and Innovation Service Day (HKIP), UPM 2018.
- Creative and Innovative Groups (KIK) Awards - First Place (technical category).
  : Quality and Innovation Service Day (HKIP), UPM 2017.
- Innovation Service (Technical) Award - First Place (technical category).
  : Quality and Innovation Service Day (HKIP), UPM 2016.

Presented at the UPM's Q3 Workshop during the University Management Committee (JPU) meeting that was chaired by the UPM Vice-Chancellor.


Skytider


Asrizam Esam

PRODUCT HIGHLIGHTS

Title: Production of an Anthocyanin-Based Coloring Foodstuff from Mangosteen (Garcinia Mangostana Linn) Pericarp- Natural food coloring from mangosteen (Garcinia Mangostana Linn)
Inventor: Prof. Dr. Russly Abdul Rahman

TECHNOLOGY DESCRIPTION
This technology is a method to produce functional food coloring using uses anthocyanins from the pericarp of mangosteen to be used in the food and beverages industry.

TECHNOLOGY FEATURES
This technology is optimized with pretreatment steps combined with spray-drying microencapsulation. The coloring produced can be used in the beverage industry, included as flavor in nutritional supplements and cosmetic or topical industry. Polyphenoloxidase of the mangosteen pericarp is thermo stable and requires the combined treatment of both thermal and chemical to complete enzyme inhibition.

ADVANTAGES
- Original food coloring produced from edible fruits.
- Does not contain dangerous chemicals.
- Rich in antioxidants which are beneficial to health.
- Provides alternative, health- based food coloring to a wide range of industry (cosmetic, beverages, nutritional supplement and herbal drinks).

INDUSTRY OVERVIEW
Prospect Industry: Local and global market for functional food ingredients.

This new food coloring made of mangosteen may see its potential market in both local and global market for food ingredients in the functional food industry. Globally, functional food and beverage sales was $118 billion in 2012, the market was expected to grow at a CAGR of 5.21 percent over the period 2013-2018. Four largest functional food/drink markets in the world are: USA ($27.8 billion), Japan ($22 billion), England ($8.08 billion), Germany ($6.4 billion). In Malaysia, the general food and beverage market is estimated at RM30 billion and trade sources estimated that functional foods consist about 40% of total processed and retail packed food and drinks markets (Stanton et al., 2011).

Title: Oil Palm Fruit Bunch Chopping Machine | | Inventor: Prof. Dr. Robiah Yunus

TECHNOLOGY DESCRIPTION

This technology is a chopping machine developed to chop the fruit bunch into small parts prior to sterilization process.

TECHNOLOGY FEATURES

This technology is able to reduce the percentage of damaged fruit. It allows fruit bunches to be efficiently sterilized compared to previous technologies. The cross-shaped blade is used to chop the fruit bunch into small parts which encourages heat penetration into the fruit bunch during sterilization process.

ADVANTAGES

- Reduce the percentage of damaged fruit
- To improve heat penetration and sterilization process
- To chop and split the fruit bunch efficiently
- Increases profit by reducing oil loss as well as increase the oil extraction rate (OER) in the mill.

INDUSTRY OVERVIEW
Prospect Industry:
Local and global Palm oil milling industry

Globally, there are about 800 oil palm mills, i.e. 782 palm oil mills, spread across 15 countries. The vast majority of these mills are found in Malaysia (50 percent) and Indonesia (44 percent). Production outside of the Southeast Asia region now accounts for 6 percent of the global market, such as in Ecuador, Colombia, Ghana and Sudan. High palm oil consumption countries include China, India, Indonesia, and the European Union. Global consumption for palm oil was 52.1 million tonnes in 2012. In Malaysia, oil palm plantations make up 77% of agricultural land or about 15% of total land area. This new innovation has potential for oil palm plantations all over the world. Potential buyers will be the bigger plantations as opposed to the smaller ones. In Malaysia, the biggest players are Federal Land Development Authority (FELDA) and Sime Darby. Sime Darby produces 2.44 million tonnes or 5% of the world's crude palm oil output annually. In Indonesia, among the big players will be Intan Sejati Andalan mill in Riau and Sawitta Jaya Lau Pakam mill in northern Sumatera.

QUOTES

"Go as far as you can see; when you get there you'll be able to see farther."
–Thomas Carlyle

"Money doesn't talk, it swears."
– Bob Dylan

AT THE **FOREFRONT** OF INNOVATION

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